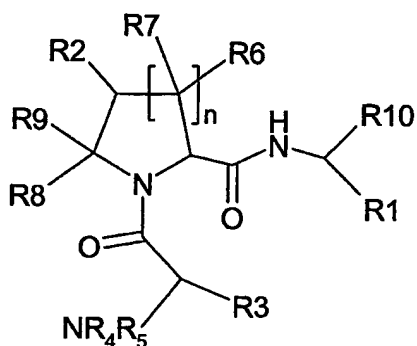


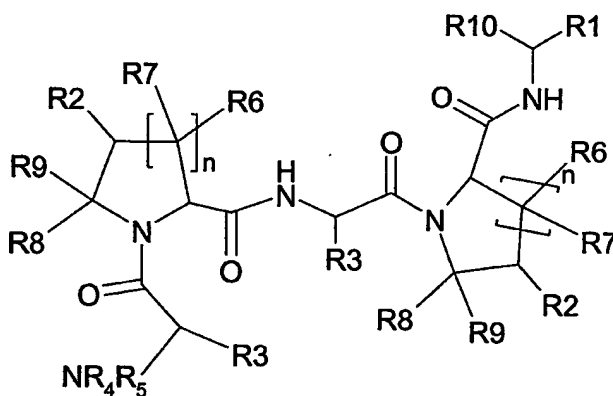
## CLAIMS

1. A compound having the general structure (I) or (II) as follows :



(I)

or



(II)

wherein :

R1 represents the side chain of an amino acid or an amino acid derivative, preferably of hydrophobic nature, an alkyl, alkenyl, or alkynyl group having from 1 to 10 carbon atoms, including CH<sub>2</sub>CH<sub>3</sub> and CH<sub>2</sub>CF<sub>3</sub> ;

R2, identical or different, represents a hydrogen atom, an alkyl group having from 1 to 10 carbon atoms, a hydroxyl function, an alkoxy group, or an (C2-14)aryloxy group, -R2 may also represent a carbonyl group (=O) ;

R3, identical or different, represents the side chain of an amino acid or an amino acid derivative, preferably of hydrophobic nature, an alkyl, alkenyl, or alkynyl group having from 1 to 10 carbon atoms, or a, substituted or not, (C2-14)aryl or (C2-

14)aralkyl group, the aryl moiety thereof being optionally interrupted by at least one heteroatom ;

R4 represents a hydrogen atom, an alkyl, alkenyl, or alkynyl group having from 1 to 10 carbon atoms ;

5 R5 represents a protecting group for the amine function ;

R6 and R7 are the same or different and each represents a hydrogen atom or an, linear, branched, or cyclic, alkyl, alkenyl, or alkynyl group having from 1 to 10 carbon atoms or a, substituted or not, (C2-14)aryl or (C2-14)aralkyl group, the aryl moiety thereof being optionally interrupted with at least one heteroatom ;

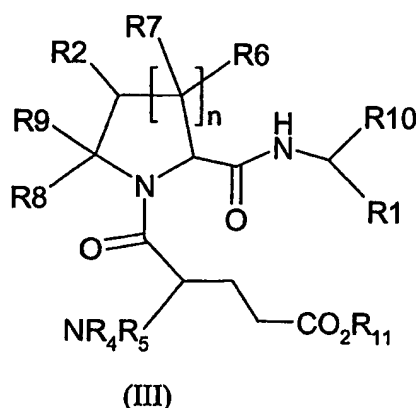
10 R8 and R9 are the same or different and each represents a hydrogen atom or an, linear, branched, or cyclic, alkyl, alkenyl, or alkynyl group having from 1 to 10 carbon atoms or a, substituted or not, (C2-14)aryl or (C2-14)aralkyl group, the aryl moiety thereof being optionally interrupted with at least one heteroatom ;

R10 represents an aldehyde (-CHO), an acid group (-COOH), a sulfonic acid (-SO<sub>2</sub>OH), -COCOOH group, a radical selected in the group consisting of : -COR, -COOR, -CONRR', -COCOOH, -SO<sub>2</sub>NRR' (a sulfonamide group), -CONHCOR, -COCONRR', -CONHSO<sub>2</sub>R, -CHOHCOR, -CHOHCOOR, -CHOHCON-RR', R and R', identical or different, represent an hydrogen atom, a hydroxyl radical, a linear, branched or cyclic alkyl, alkene or alkyne group having from 1 to 10 carbon atoms, an alkoxy group, an amine group or a, substituted or not, (C2-14)aryl, (C2-14)aralkyl, or (C2-14)aralkoxy group, the aryl moiety thereof being optionally interrupted with at least one heteroatom ;

n is 1 or 2 ;

25 their tautomers, optical and geometrical isomers, racemates, salts, hydrates and mixtures thereof.

2. A compound according to claim 1, wherein the compound corresponds to the following general formula (III) :



wherein :

5 R1, R2, R4, R5, R6, R7, R8, R9, R10 and n are as defined above and R11 represents a hydrogen atom, an alkyl group having from 1 to 10 carbon atoms inclusive or a carboxy protecting group ;  
their tautomers, optical and geometrical isomers, racemates, salts, hydrates and mixtures thereof.

10 3. A compound according to claim 2, wherein :

R1 represents an alkyl group having from 1 to 10 carbon atoms inclusive or the side chain of an amino acid or an amino acid derivative, including CH<sub>2</sub>-CH<sub>3</sub> and CH<sub>2</sub>CF<sub>3</sub>;

15 R2 represents a hydroxyl group, an alkoxy group having from 1 to 10 carbon atoms, or -R2 may also represent a carbonyl group (=O) ;

R4 represents a hydrogen atom ;

R5 represents an amine protecting group ;

20 R6 and R7 are the same or different and each represents a hydrogen atom, a linear or branched alkyl group having from 1 to 10 carbon atoms or a cycloalkyl group having from 1 to 10 carbon atoms, including a cyclohexyl derivative ;

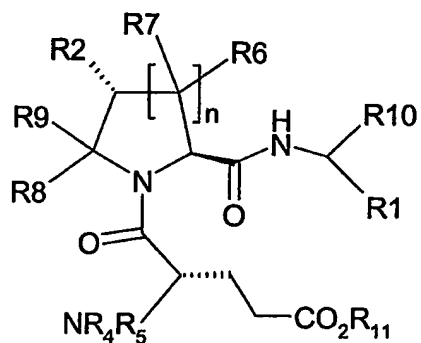
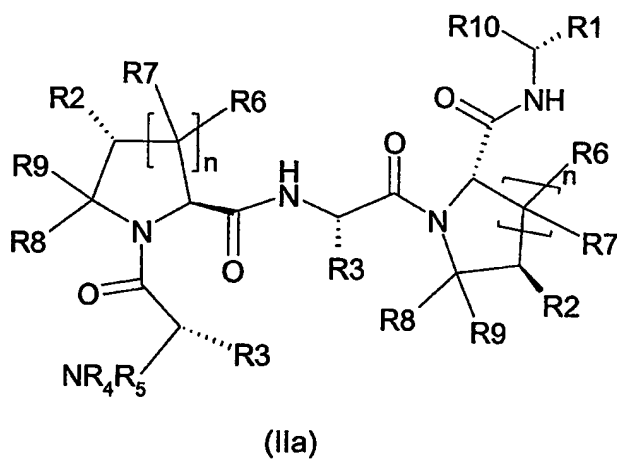
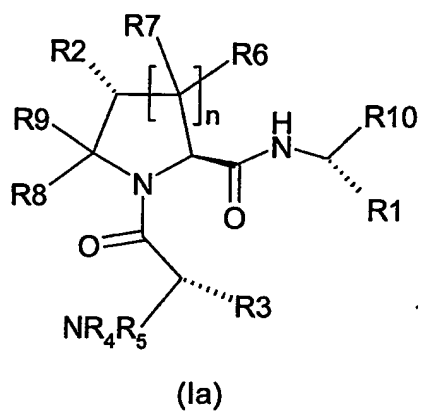
R8 and R9 are the same or different and each represents a hydrogen atom or a linear or branched alkyl group having from 1 to 10 carbon atoms inclusive ;

R10 represents an acid group, an ester group, an alkanoyl group, a keto-acid, a keto-ester, a keto-amide or a α-hydroxy-keto derivative ;

25 R11 represents a hydrogen atom, an alkyl group having from 1 to 10 carbon atoms inclusive or a carboxy protecting group ; and  
n is 1 or 2 ;

their tautomers, optical and geometrical isomers, racemates, salts, hydrates and mixtures thereof.

4. A compound according to one of the preceding claims, wherein the compound  
5 has the following formulae (Ia), (IIa) or (IIIa) :



## (IIIa)

5 5. Compounds according to one of the preceding claims, wherein the amino acid side chain corresponds to any side chain of the naturally occurring (L form) or synthesized (L or D form) aminoacids (in particular alpha-aminoacids and aminocyclopropanoic acid), or derivative thereof, optionally substituted.

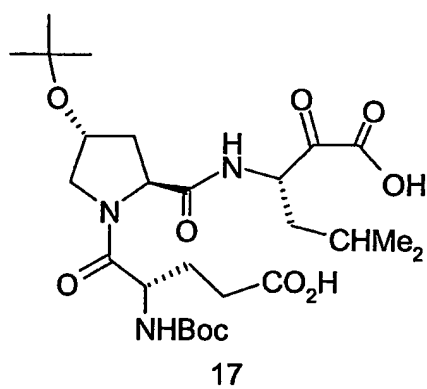
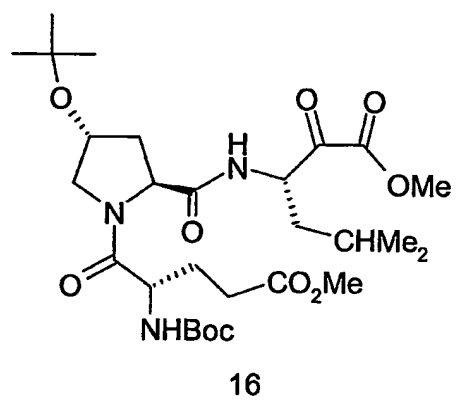
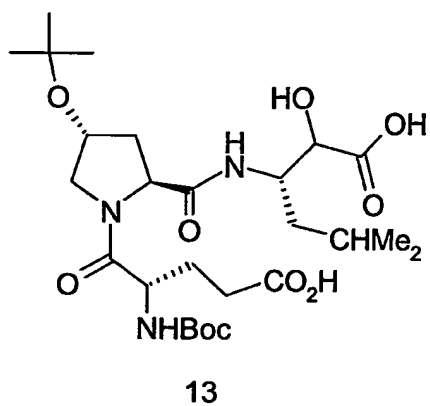
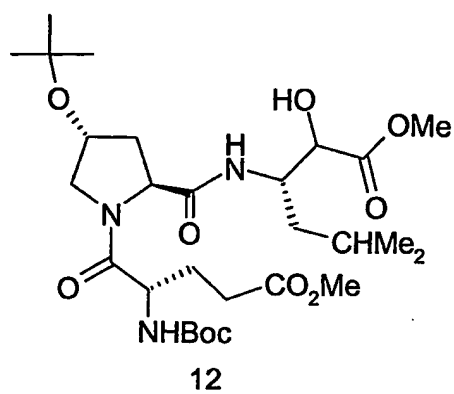
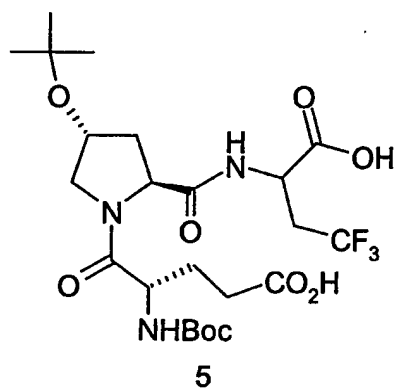
10 6. Compounds according to the preceding claim, wherein the amino acid side chain is selected in the group consisting of  $-\text{CH}_3$ ,  $-\text{CH}(\text{CH}_3)_2$ ,  $-\text{CH}_2-\text{CH}(\text{CH}_3)_2$ ,  $-\text{CH}(\text{CH}_3)\text{C}_2\text{H}_5$ , H,  $-\text{CH}_2\text{OH}$ ,  $-\text{CH}_2\text{CH}_3$ ,  $-\text{CH}(\text{OH})\text{CH}_3$ ,  $-\text{CH}_2\text{SH}$ ,  $-\text{CH}_2\text{CF}_3$ ,  $-(\text{CH}_2)_2-\text{S}-\text{CH}_3$ ,  $-\text{CH}_2\text{CH}_2\text{CF}_3$ ,  $-\text{CH}_3\text{C}_2\text{H}_5$ ,  $-\text{CH}_2\text{C}_6\text{H}_5$ ,  $-\text{CH}_2-\text{C}_6\text{H}_4(\text{OH})$ ,  $-\text{CH}_2\text{CONH}_2$ ,  $-(\text{CH}_2)_2\text{CONH}_2$ ,  $-\text{CH}_2\text{COOH}$ ,  $-(\text{CH}_2)_2\text{COOH}$ ,  $-(\text{CH}_2)_4\text{NH}_2$ ,  $-(\text{CH}_2)_3\text{NHC}(\text{NH}_2)_2$ ,  $-\text{CH}_2\text{CH}=\text{CH}$  and  $\text{C}_6\text{H}_5$ .

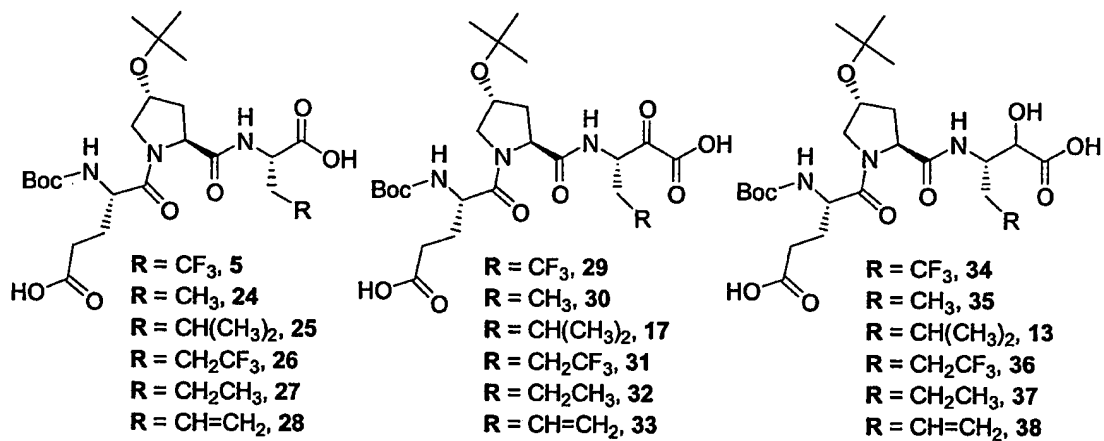
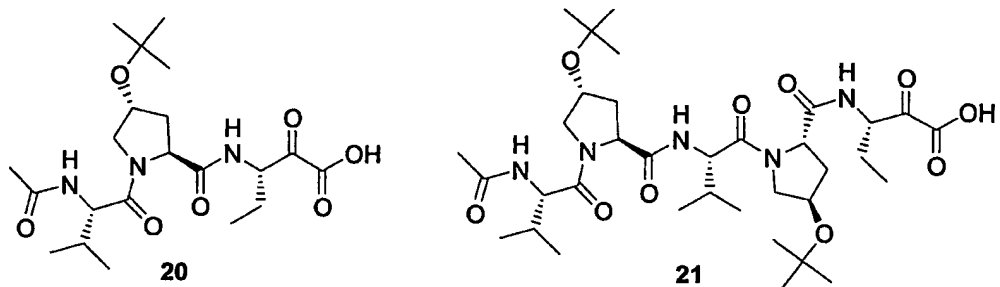
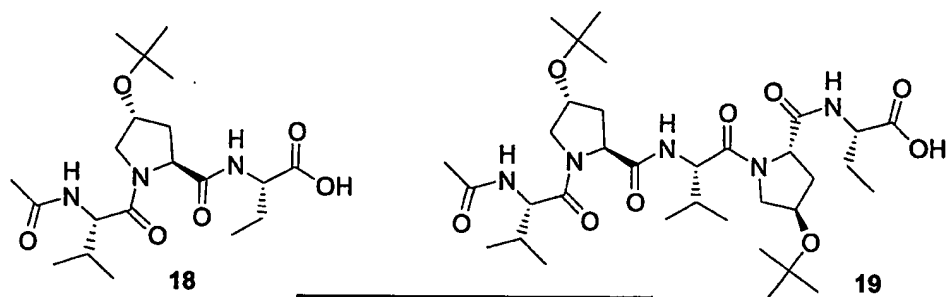
15 7. Compounds according to one of the preceding claims, wherein R5 stands for acetyl, benzyloxycarbonyl (Cbz) or t-butyloxycarbonyl (Boc) groups ; and/or R1 stands for  $-\text{CH}_2-\text{CH}_3$ ,  $-\text{CH}_2-\text{CF}_3$ ,  $-\text{CH}_2-\text{CH}_2-\text{CF}_3$ ,  $-\text{CH}_2\text{CHCH}_2$  or  $-\text{CH}_2-\text{CHMe}_2$ ; and/or R2 stands for t-butyloxy ; and/or R3 stands for  $-(\text{CH}_2)_2\text{COOH}$ ,  $-\text{CH}(\text{CH}_3)_2$ , or  $-(\text{CH}_2)_2\text{COOCH}_3$  ; and/or R10 is acid,  $-\text{CHOHCOR}$ , with R is OH or an alkoxy group (preferably methoxy or ethoxy), keto-acid, keto-ester (preferably  $-\text{COCOOME}$ ,  $-\text{COCOEt}$  or  $\text{COCOBN}$ ), keto-amide (preferably  $\text{COCONHMe}$ ,  $\text{COCONHEt}$  or  $\text{COCONHBn}$ ) ; and/or R4 is H ; and/or R6 is H ; and/or R7 is H ; and/or R8 is H ; and/or R9 is H; and/or R10 is H and/or  $n = 1$ .

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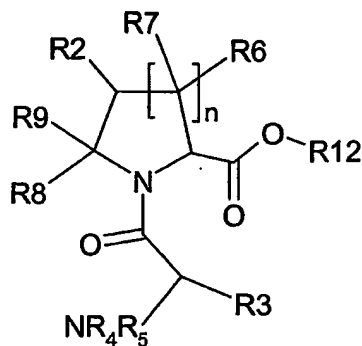
25 8. A compound of formula (I) or (II) as defined in claim 1, which is selected in the group consisting of compounds of formula (I).

9. A compound of formula (I) as defined in claim 1, which is selected in the group consisting of :





10. A compound corresponding to the following formula (V) :

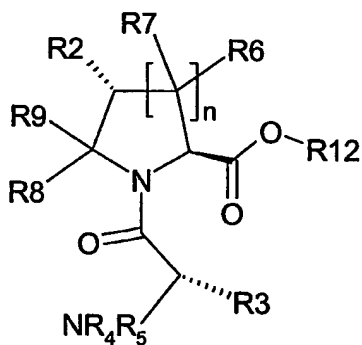


(V)

wherein R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub> are as defined in one of the preceding claims and R<sub>12</sub> represents a hydrogen atom, an alkyl group (in particular, methyl, ethyl or t-butyl), alkenyl (allyl), an aralkyl (for instance, benzyl) or a cycloalkyl group; and n is 1 or 2 ;

their tautomers, optical and geometrical isomers, racemates, salts, hydrates and mixtures thereof.

11. A compound according to the preceding claim, wherein it presents the following formula (Va) :



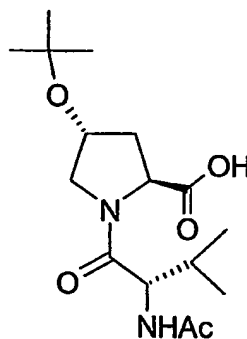
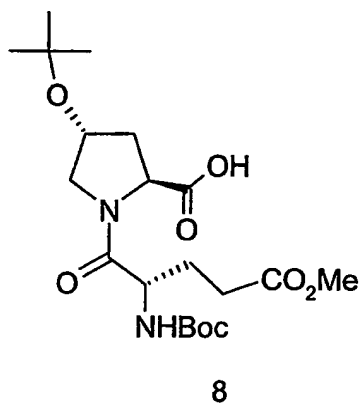
(Va)

12. A compound according to claim 10 or 11, wherein it corresponds to compounds of formula (V) wherein R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub>, independently from each other, represents a hydrogen atom, an alkyl, an alkoxy group, or a cycloalkyl group, and preferably a hydrogen atom.



13. A compound according to the preceding claim which has one of the following formulae:

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14. A compound according to one of claims 10-13, useful as an intermediate compound to prepare a compound of formula (I) or (II) as defined in claims 1-9 or as an active pharmaceutical ingredient, such as an antiviral agent (antiviral HCV agent).

15. A pharmaceutical composition comprising at least one compound as defined in any of the preceding claims and a pharmaceutically acceptable vehicle or support.

16. A pharmaceutical composition according to the preceding claim, said composition further comprising at least one immunomodulatory agent, other

antiviral agent, other inhibitor of hepatitis C protease; inhibitor of other targets in the HCV life cycle, or combinations thereof.

5 17. A pharmaceutical composition according to claim 15 or 16, useful for treating a disease related to an infection by a virus (preferably flavivirus, such as dengue virus, yellow fever virus, West Nile fever virus, or HCV), bacteria or pathogen dependent upon a serine protease for proliferation

10 18. A pharmaceutical composition according to claim 15 or 16, useful for treating HCV infection and the like.

15 19. A pharmaceutical composition according to claim 15 or 16, useful for treating hepatitis C virus infection and complications thereof, in particular chronic hepatitis, cirrhosis or hepatocellular carcinoma and extrahepatic manifestation.

20 20. Use of an effective amount of at least one compound of formula (I), (II), (III) or (V) as defined in any of the claims 1-13 for the preparation of pharmaceutical composition intended for the treatment of a disease associated with an infection by a virus (preferably flavivirus, such as dengue virus, yellow fever virus, West Nile fever virus or HCV), bacteria or pathogen dependent upon a serine protease for proliferation.

25 21. Use of an effective amount of at least one compound of formula (I), (II) or (III) as defined in any of the claims 1-13 for the preparation of pharmaceutical composition intended for the treatment of a disease associated with HCV infection.

30 22. A method of evaluating the modulation properties of test compounds towards NS3 serine protease, particularly HCV NS3 serine protease, said method implementing *in vitro* primary cultures of human hepatocytes and compounds as defined in any of the claims 1-13.

23. A method for screening and/or characterizing compounds that present antiviral activity, in particular antiviral HCV activity, by implementing *in vitro* primary

cultures of human hepatocytes and compounds as defined in any of the claims 1-13.

5 24. A method according to the preceding claim, said method comprising the following steps :

- c) contacting a test compound with the *in vitro* primary cultures of human hepatocytes described herein in presence of HCV or active part thereof, and
- 10 d) determining the antiviral activity of the test compound in comparison with the antiviral activity of one of the compounds as defined in any one of claims 1-13.

25. Use of at least one compound as defined in any of the preceding claims 1-13 as an agent to treat or prevent viral contamination of materials.

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